

WHITEHOUSE COMPARES GOOD AND BAD POINTS OF DIFFERENT PAVINGS

"Warrenite," Asphalt-Macadam and Concrete Taken Up in City Engineer's Report

Road work and road materials, especially those most suitable for Honolulu and Oahu, are taken up in detail in the following report made to the board of supervisors by City and County Engineer L. M. Whitehouse, which deals especially with the Kalakaua project:

Frontage to Be Assessed.

"The total frontage to be assessed is 15,790.0 feet. City and County frontage is 1339.5 ft. or 9.7 per cent of entire frontage. U. S. military reservation frontage is 1050.6 ft. or 7.7 per cent of entire frontage. Church frontage is 192.3 ft. or 1.4 per cent of entire frontage.

"Total frontage for which City and County must pay, in addition to \$3.13 per cent of cost of entire improvement less new curbing, is 2591.4 feet, or 18.8 per cent of entire frontage, which gives a total cost to the city and county of about 46.0 per cent of the entire cost of the improvements, less new curbing.

"Total frontage of property consisting of duck-ponds, worth about \$0.02 per square foot, and which may be counted on as an objecting frontage, is 3729.6 ft. or 27.4 per cent of the entire frontage.

WARRENITE PAVEMENT, ESTIMATES OF COST.

Unit Price for Warrenite.

"The unit price of \$1.80 per square yard was obtained by using the figure submitted by J. A. Gilman of \$1.70 per square yard for the paving of Lualaba street, exclusive of grading, and adding thereto \$0.10 per square yard to cover the difference in haul involved.

Estimates of Cost.

"Excluding the cost of new curbing, which remains a constant for any type of pavement and which is paid for by a separate assessment of \$0.40 per front foot by all frontage requiring such new curbing, the estimates of cost for the entire improvement using warrenite on a six-inch crushed rock base are as follows:

"Grading 32,000 sq. yds. at \$0.20, \$6,400; warrenite paving, 32,000 sq. yds. at \$1.80, \$57,600; moving old curbing, 5850 lineal feet at 0.12, \$702; concrete gutters, 3060 sq. yds. at \$1.70, \$5202; storm sewer, \$8000; engineering and superintendence, \$2000. Total, \$78,924.

"Assessment per front foot exclusive of new curbing, after city and county has paid \$3.13 per cent of above total is \$3.864.

"Total cost to city and county, including new curbing, is \$37,616.

"Cost of warrenite paving is 72 per cent of the estimated cost of the entire improvement less new curbing.

"The probable life of warrenite pavement on Kalakaua avenue will be 10 years.

"Advantages of using warrenite on a 6 inch crushed rock base are:

"Increased life over asphalt macadam due to a compact top surface impervious to water.

"Greater resistance to the impact and abrasion of traffic due to a wearing surface having greater freedom

from voids than is found in asphalt macadam.

"Disadvantages of using warrenite on a 6 inch crushed rock base are:

"The ultimate failure of the crushed rock base due to the continued pressure of traffic, as evidenced by the appearance of waves in the pavement surface and final development of ruts, a fault of the crushed rock base and not of the warrenite surface.

"The probable difficulty of inducing the Honolulu Rapid Transit & Land Co., Ltd., to pave with warrenite the portion of Kalakaua avenue occupied by said company, and the relatively high first cost.

Asphalt Macadam Pavement. Estimates of Cost.

"Allowing all items, excepting item No. 2 shown in the estimate in Section II, paragraph No. 2 above, to remain as there given, the total cost of the improvement exclusive of new curbing and warrenite paving is \$22,324.00. Add asphalt macadam, 32,000 sq. yds., at \$1.15, \$36,800. Total, \$59,124.

"Assessment per front foot, exclusive of new curbing, after city and county has paid \$3.13 per cent of above total, is \$2.85. Total cost to city and county, including new curbing, is \$23,062. Cost of asphalt macadam paving is 62.2 per cent of the estimated cost of the entire improvement less new curbing.

"The probable life of asphalt macadam on Kalakaua avenue will be seven (7) years.

"Advantages of using asphalt macadam are:

"Relatively low cost.

"Assurance of harmony with the Rapid Transit in completing the improvement.

"Capability of using the asphalt macadam at the end of its lifetime as a base for a new wearing surface of warrenite or other similar mixture.

"Disadvantages of using asphalt macadam are:

"Relatively short life as compared with warrenite or concrete.

"Presence of voids in the wearing surface which in time assist in the failure of the pavement by the development of ruts.

Concrete Pavement. Estimates of Cost.

"Concrete 6 inches thick, without reinforcement.

"Total cost of improvement exclusive of new curbing and pavement as shown under Section II above, is \$22,324.

"Add concrete pavement, 32,000 sq. yds., at \$1.60, \$51,200. Total, \$73,524.

"Assessment per front foot exclusive of new curbing after city and county has paid \$3.13 per cent of above total, is \$3.55.

"Total cost to city and county, including new curbing, is \$34,671.

"The cost of concrete paving is 68.6 per cent of the cost of the entire improvement less new curbing.

"The probable life of concrete pavement on Kalakaua avenue, provided the surface of the concrete is protected from wear by the application of asphalt at proper intervals, will be at least 15 years.

"Advantages of using concrete paving are:

"Increased life over asphalt macadam or warrenite.

"A smooth surface free from waves or ruts, provided the asphalt wearing coat is properly maintained.

"An excellent foundation is afforded upon which to place a bituminous concrete wearing surface such as warrenite at any time such additional expense is justifiable.

"Does not require perfectly dry weather conditions for its construction as asphalt macadam does.

"Disadvantages. There are no practical disadvantages for using concrete in paving Kalakaua avenue except its higher cost as shown by comparing the assessments per front foot given above.

Conclusions.

"Not more than three classes of pavements have been compared above for the reason that other pavements do not admit of consideration under the particular conditions applying to Kalakaua avenue. A cheaper pavement was not considered owing to its short life and high maintenance expense. A more durable pavement, of which there are many, was not considered on account of a prohibitive first cost.

"In drawing a conclusion from the above data, as to what type of pavement should be used on Kalakaua avenue, three facts among others should be kept in mind: First, twenty-seven and four-tenths (27.4) per cent of the entire frontage represents property of low value in its present condition, the owners of which might logically be expected to object unless the improvement represents a very reasonable unit assessment.

"Second, the greater the first cost of the improvement, the less will be the chance of making any improvement under the law and the present policy laid down by your board.

"Third, no matter how desirable or how economical a particular pavement may be, its first cost, under the condition obtaining on Kalakaua avenue, should be the controlling factor in its selection."

PACKARD PEOPLE EMPLOY ARMY OF 10,000 WORKERS

The Packard Motor Car Company now employs 10,179 people at its Detroit plant. More than 500 of this number have been added since November 1, and the great mass of workers that surge from the 40 factory buildings every afternoon at 5 o'clock, would make up an army of formidable size.

The Packard employment department is still working at top speed, hiring them to supply the demands for workers in nearly every division of the factory.

Incoming material, which has been delayed by the war and for various other reasons, is arriving in train loads daily. Traffic Manager Charles Shaar says that 477 carloads of material and 3,273,560 pounds, in less than carload lots, were received during October.

A vigorous effort is being made to prevent any further postponement of deliveries of twin sixes. The delay in materials has been responsible for the lateness in supplying the new

cars to customers—many of whom are anxiously waiting.

The company has an extensive welfare department, operating night schools for foremen and assistant foremen, and a school for apprentices who are trained to become foremen and expert mechanics.

'THE PROOF OF THE PUDDING'

is said to be in the eating. The proof of good dry cleaning is shown after one week's wear. Expert cleaning, scientific methods, such as we use, clean through and through, not superficially. Phone 1491 or 2919 for the French Laundry.—Adv.

The Adams Express Company have declared regular quarterly dividend of \$1 per share out of net earnings from the express business and net revenue from investments held by the trustees, payable Dec. 1.

To the Public

I have severed my connection with the firm of Mederos & Mattos Plumbing Co., 816 S. King street, and take pleasure in informing my friends and the public that I am now located at 918 Alakea street, near King, and am prepared to do the best plumbing and metal work.

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The secret of the low prices is simply this: We are selling them on a small commission and return all unsold rugs to the consignor. The secret of the quality is in the fact that we will not handle any rugs unless of known value and high grade. You will find these rugs all we claim for them—beautiful, genuine and low-priced. We invite inspection, whether you wish to buy or not. Prices range from \$17.50 up. Just the thing for Christmas Gifts.

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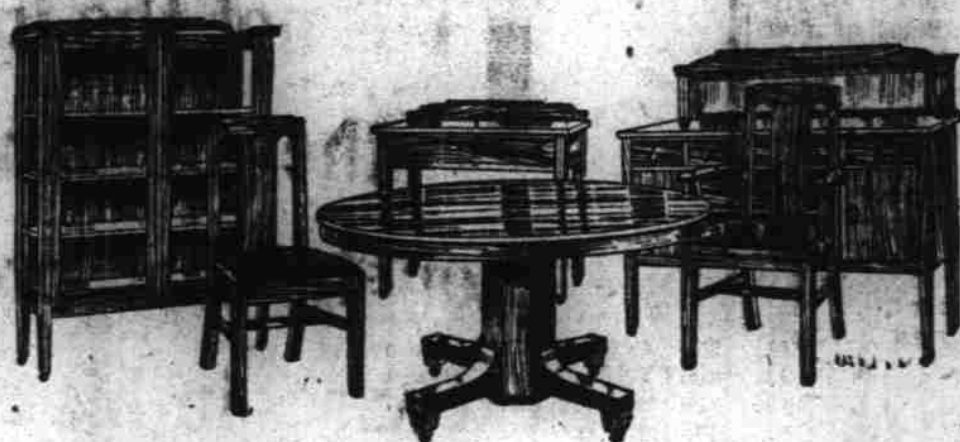
S. S. Manca leaves Dec. 7th
All shipments for Middle West and East must leave on this boat to be delivered Christmas morning.

Anywhere on the mainland
\$2.50 to \$3.60 including fruit and expressage.



S. S. Matsonia leaves Dec. 15th
All shipments for Pacific Coast points must leave on this boat to be delivered Christmas morning.

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